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STATUS OF USE OF THE BAND 13.75-14.00 GHz IN THE US

1.- Introduction and Background (I)

1.1.- 1992-2003

- At WARC-92, the band 13.75-14.00 GHz was allocated to FSS in order to try to correct the imbalance in FSS uplink spectrum allocations. However, there was a problem, the minimum size of the earth station antennas that could be used was limited to 4.5 meters.
- The limiting conditions for this band were contained in footnotes Nos 5.502 / 5.503 of RR. This footnotes are presently in force in the United States Table of Frequency Allocations.
- WRC-2000 adopted an agenda item which addressed the size of terminal that could be used.
- After a study period of three years, WRC-2003 took the action to modify the international footnotes indicated above to state, 5.502: "*In the band 13.75-14.00 GHz, an earth station of a geostationary fixed-satellite shall have a minimun antenna diameter of 1.2 meter and an earth station of a non-geostationary fixed-satellite service system shall have a minimum antenna diameter of 4.5 m….*"
- Therefore, at WRC-2003, the minimum antenna size to be used in this band was reduced to 1.2 meter. The United States was a signatory to this Conference without reservation.

1.- Introduction and Background (II)

1.2 .-2003 – Present (I)

- Although other countries, for example Canada, proceeded to implement the results of WRC-2003 with respect to this new provision, the United States has not. One related result of WRC-03 was determination of the need for an ITU-R Recommendation for use to ensure protection of radars in that band. This assignment was given to ITU-R Study Group 4. This Group produced Recommendation ITU-R S. 1712, "*Methodologies for determining whether an FSS earth station at a given location could transmit in the band 13.75-14.0 GHz without exceeding the pfd limits in No. 5.502 of the Radio Regulations, and guidelines to mitigate excesses.*" ensuring protection of radars in this band.
- Meanwhile, in expectation that the US would be implementing the results of the conference, Amazonas-1 was launched and included the capability to use the 13.75-14.00 GHz band in the US.
- When it appeared that the US was not proceeding to carry out such implementation, the representative of Hispasat S.A. in the US filed a Petition with the FCC requesting that its rules be modified to incorporate the results of WRC-03 (reference **RM-10784 on 24th February 2006**).
- the FCC proceeded to ask the public for comments (reference **RM-11351 on 1st December 2006**). The Petition received considerable support from both the European and United States Satellite Associations and individual satellite operators such as Intelsat and SES.

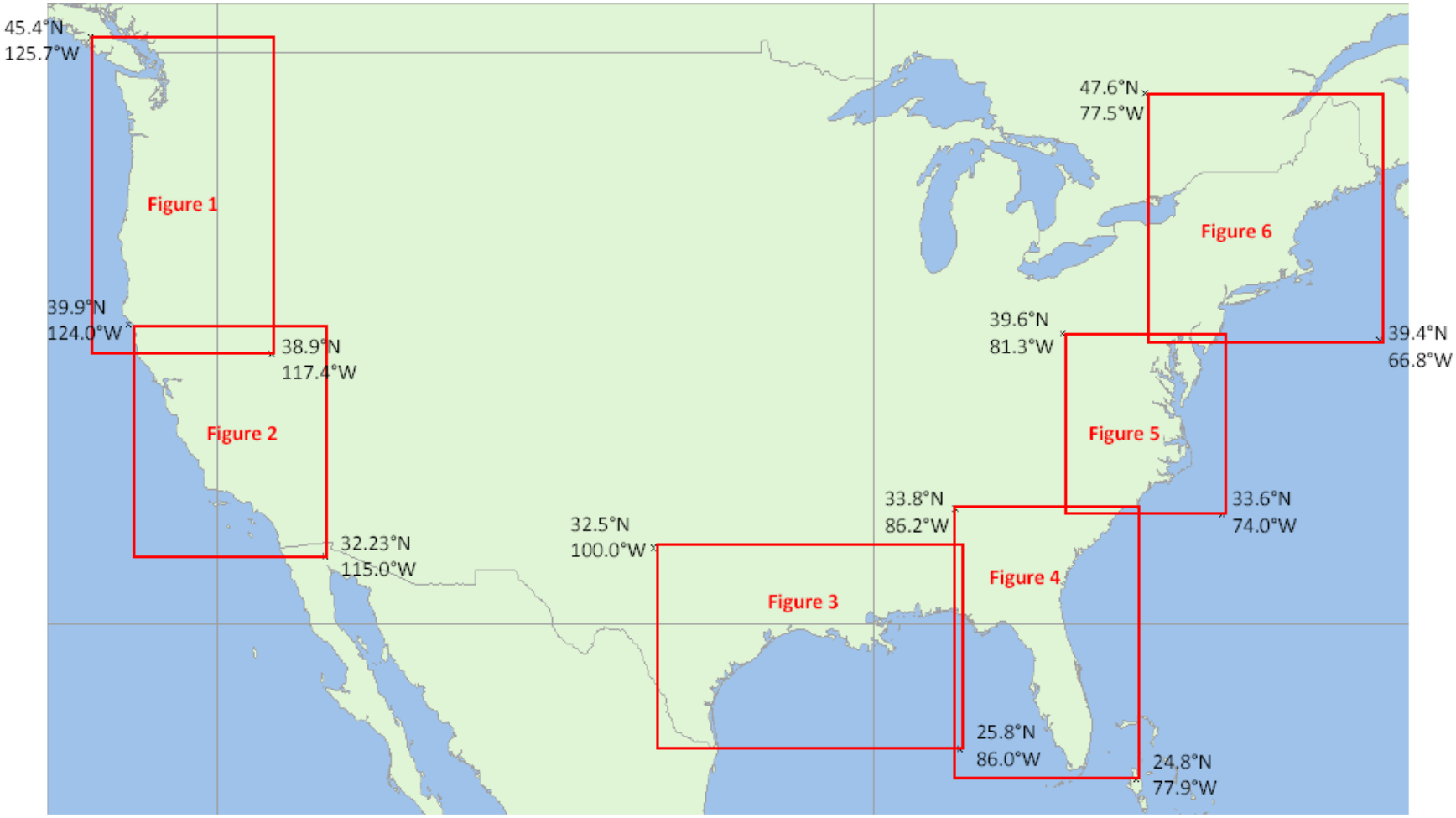
1.- Introduction and Background (III)

1.2.- 2003 – Present (II)

- It was hoped that action would be taken after the positive comments. However, the FCC staff indicated that there was no methodology to provide for the blanket licensing of earth terminals which could be easily administered by FCC staff. It was further indicated that having such a capability would help to move the Petition forward. As a consequence an effort was undertaken, successfully, to develop a tool which could be used for this purpose. This effort resulted in a series of contours and tables which could be used to provide protection for radars onboard ships in this band in all parts of continental United States.
- The Petition was modified to include the methodology for providing the protection contours for locating the earth stations with smaller antennas (based on Recommendation ITU-R S. 1712) so that they would be permitted under the modified rules (reference **RM-11351 on 24th September 2008**).
- How this would be accomplished is illustrated in next Figures. Earth stations of the size indicated, from 1.2m to 4.5m, according to color, could be located at distances beyond the distances from the coastline and could have transmissions using the powers shown in the inserted table, providing protection for radars onboard ships in this band.

Protection contours

This Figure shows how is going to be spanned the USA coastline in 6 figures to create an antenna size tables and E.I.R.P. combinations for suitable contours to meet pfd limit in RR 5.502.



Protection contours (Figure 1)

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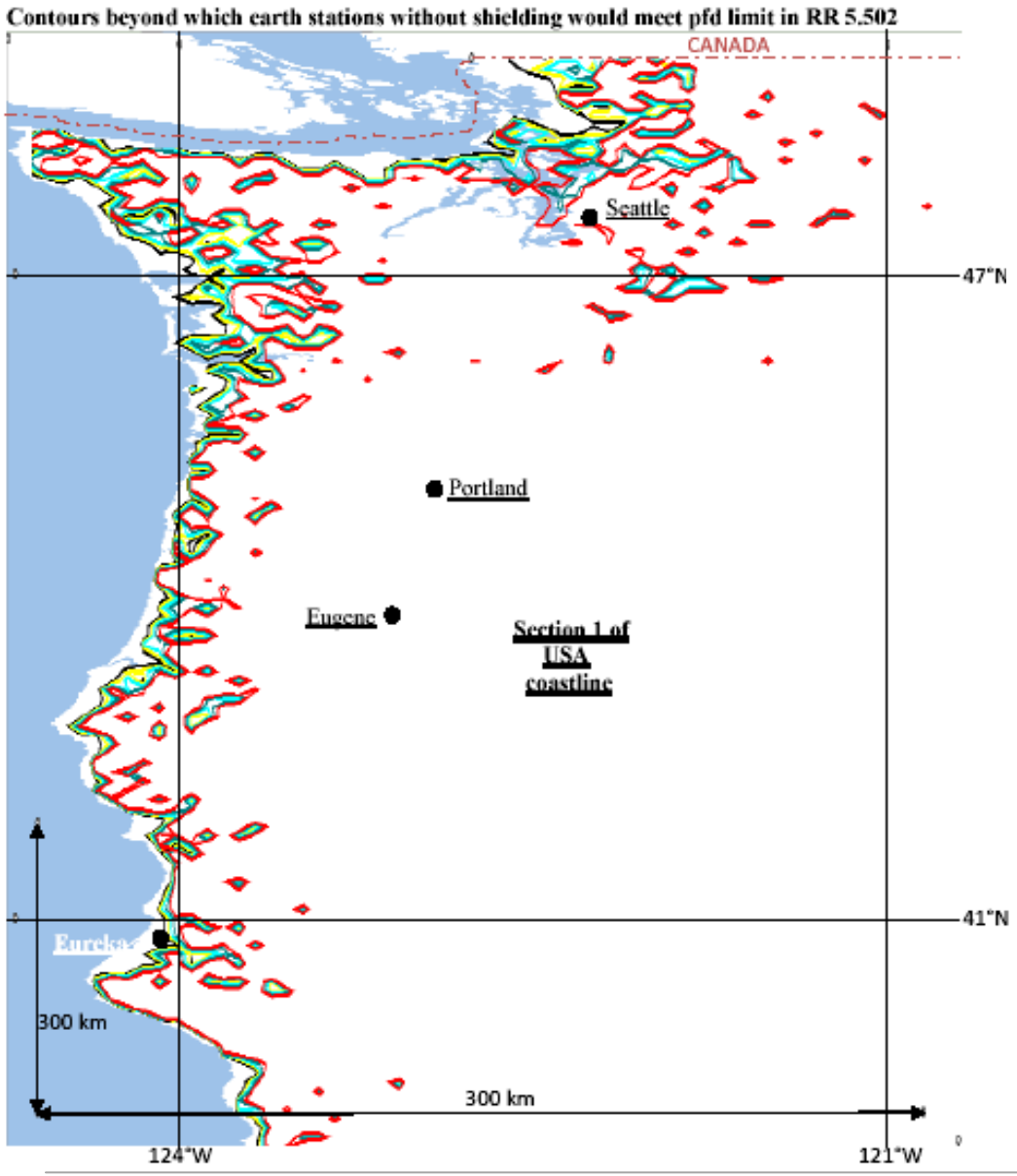
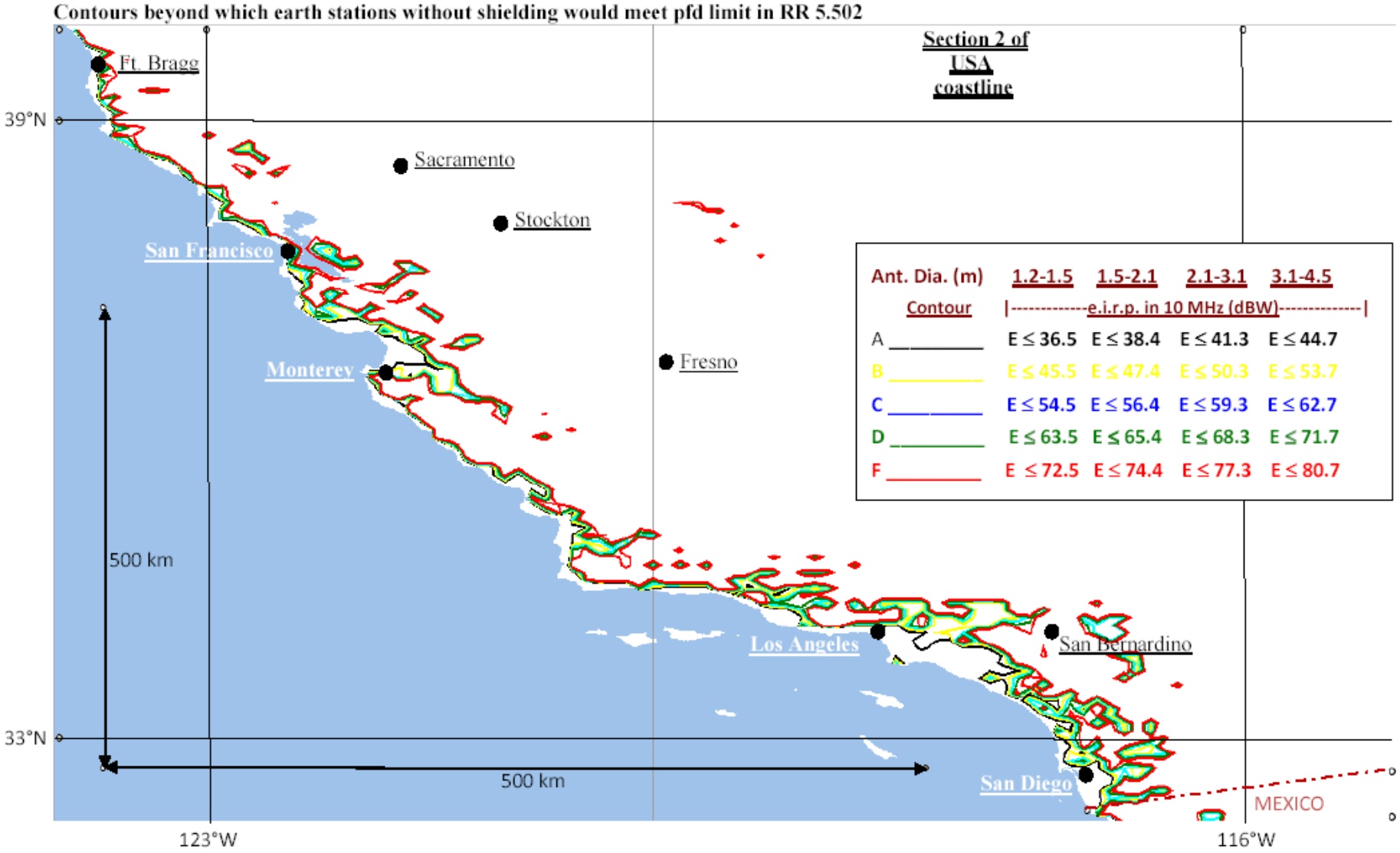
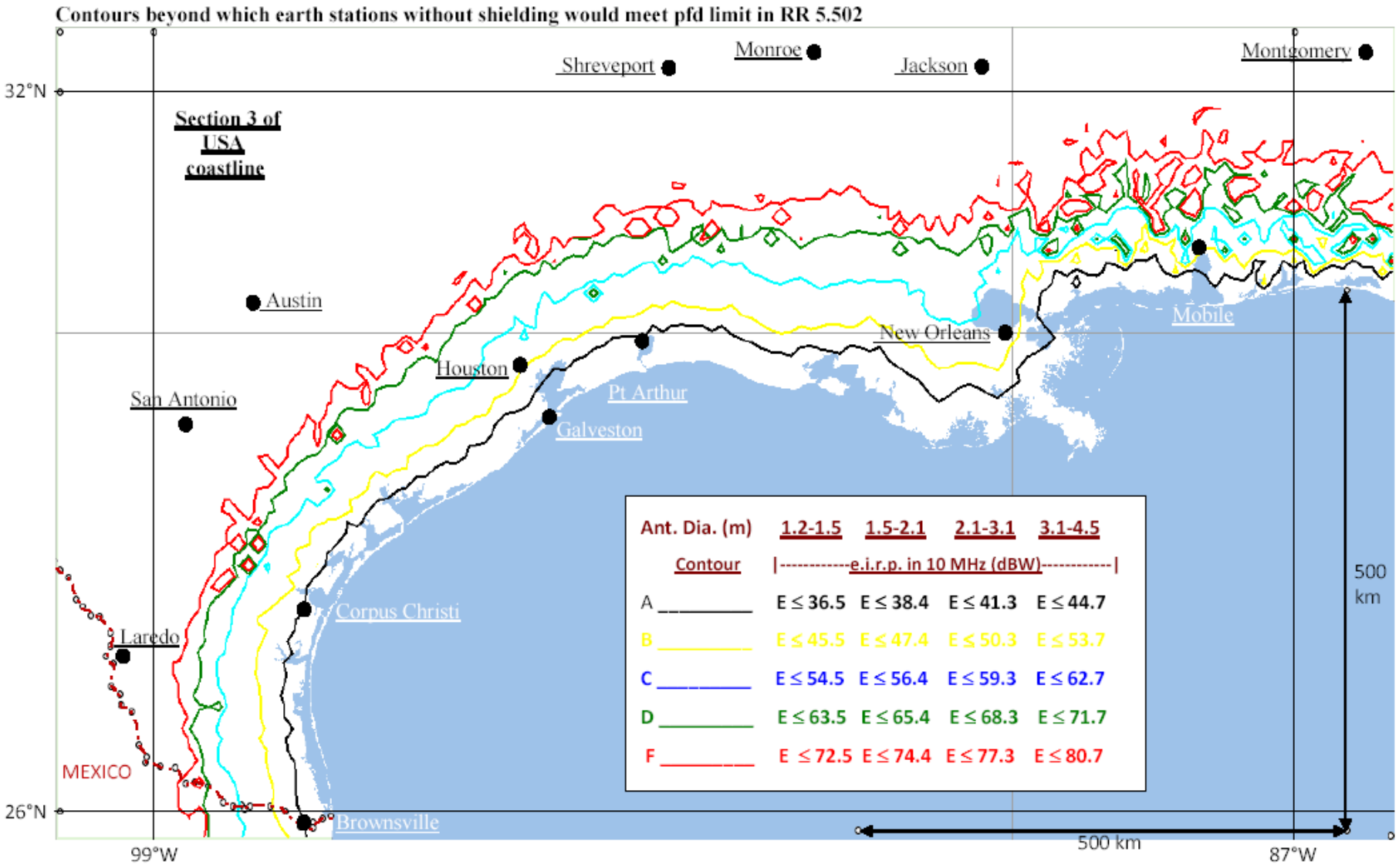


Ant. Dia. (m)	1.2-1.5	1.5-2.1	2.1-3.1	3.1-4.5
Contour	e.i.r.p. in 10 MHz (dBW)			
A	E ≤ 36.5	E ≤ 38.4	E ≤ 41.3	E ≤ 44.7
B	E ≤ 45.5	E ≤ 47.4	E ≤ 50.3	E ≤ 53.7
C	E ≤ 54.5	E ≤ 56.4	E ≤ 59.3	E ≤ 62.7
D	E ≤ 63.5	E ≤ 65.4	E ≤ 68.3	E ≤ 71.7
F	E ≤ 72.5	E ≤ 74.4	E ≤ 77.3	E ≤ 80.7

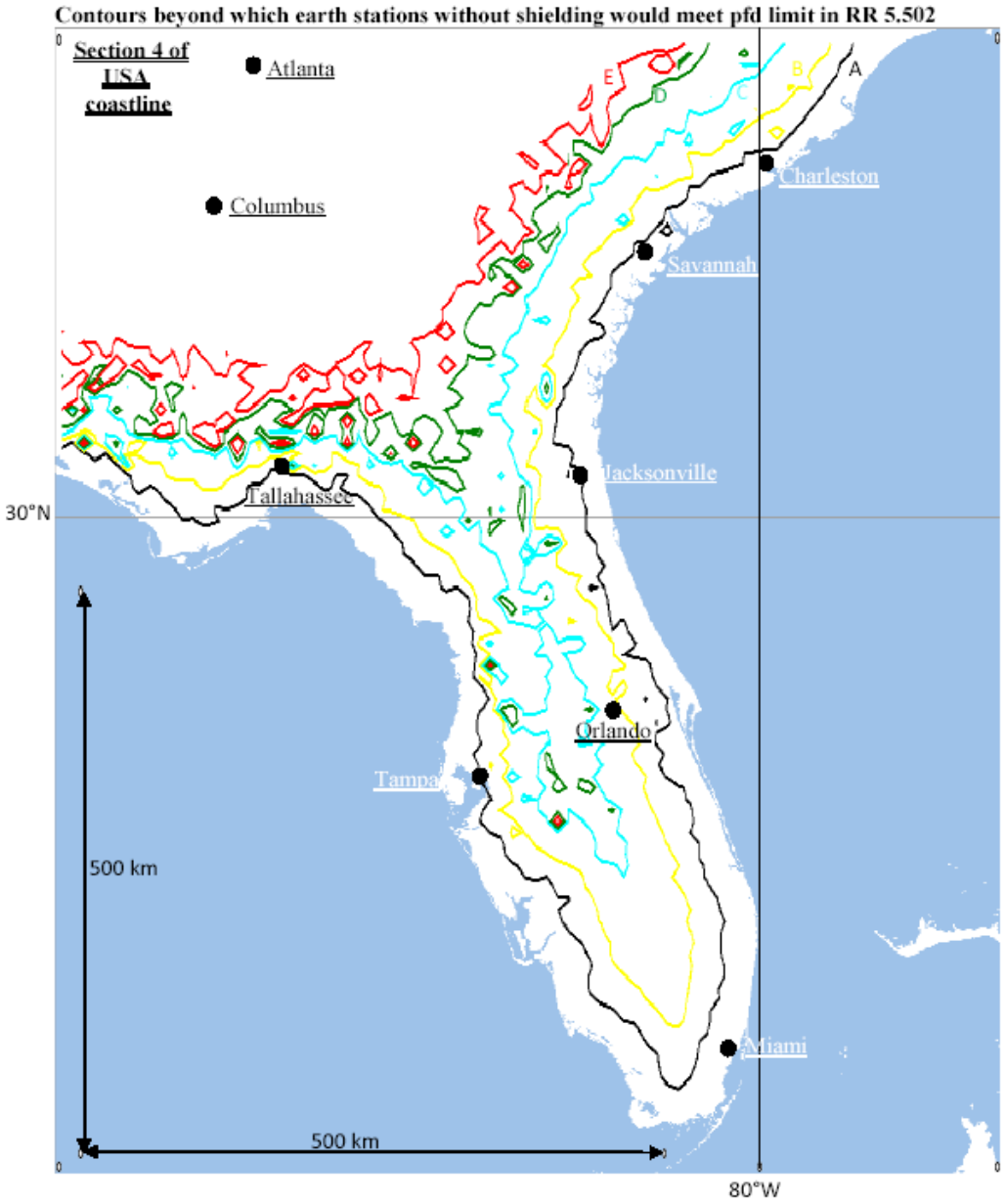
Protection contours (Figure 2)



Protection contours (Figure 3)



Protection contours (Figure 4)



Ant. Dia. (m)	1.2-1.5	1.5-2.1	2.1-3.1	3.1-4.5
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Protection contours (Figure 5)

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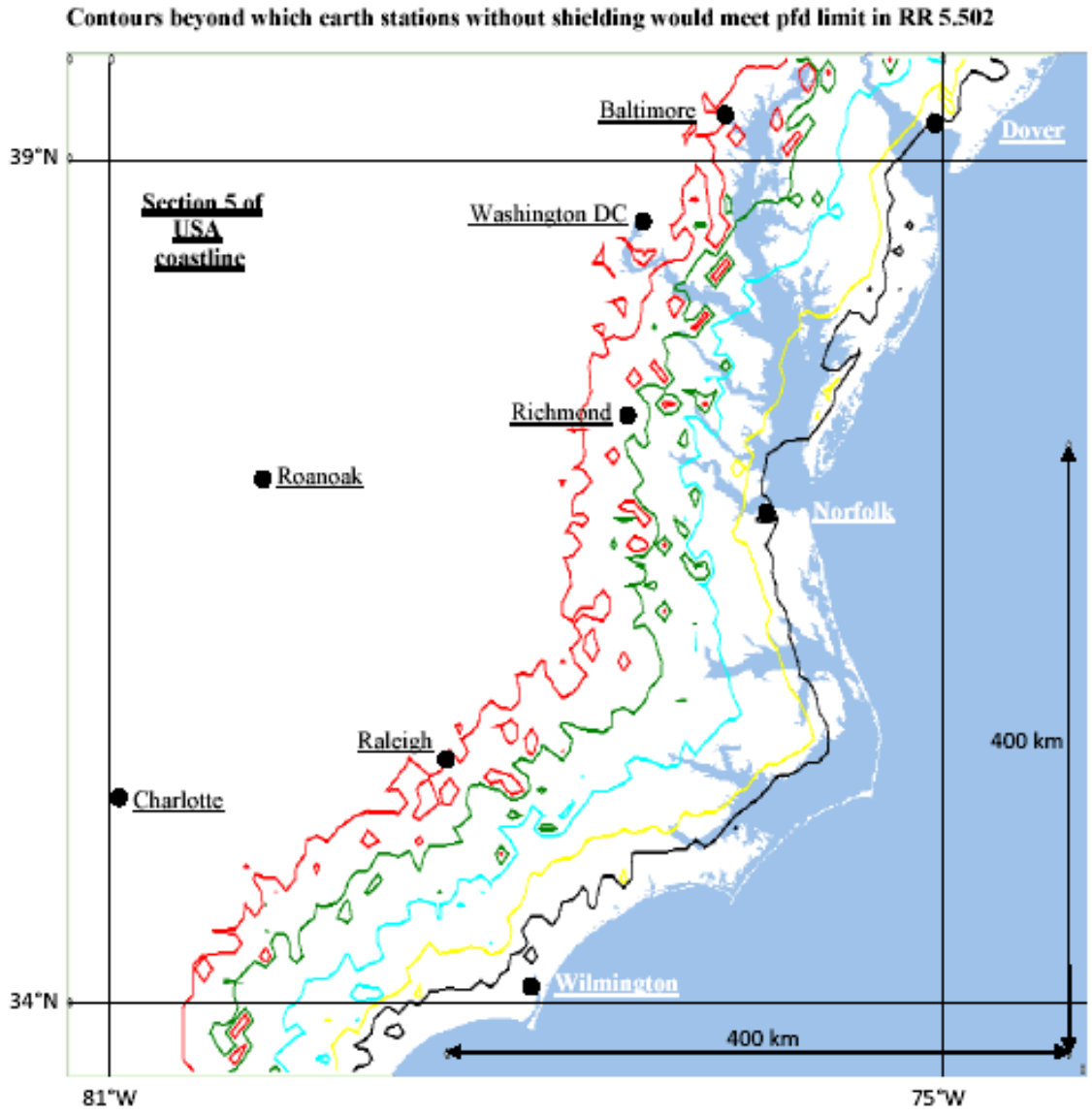

Ant. Dia. (m)	1.2-1.5	1.5-2.1	2.1-3.1	3.1-4.5
Contour	e.i.r.p. in 10 MHz (dBW)			
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Protection contours (Figure 6)

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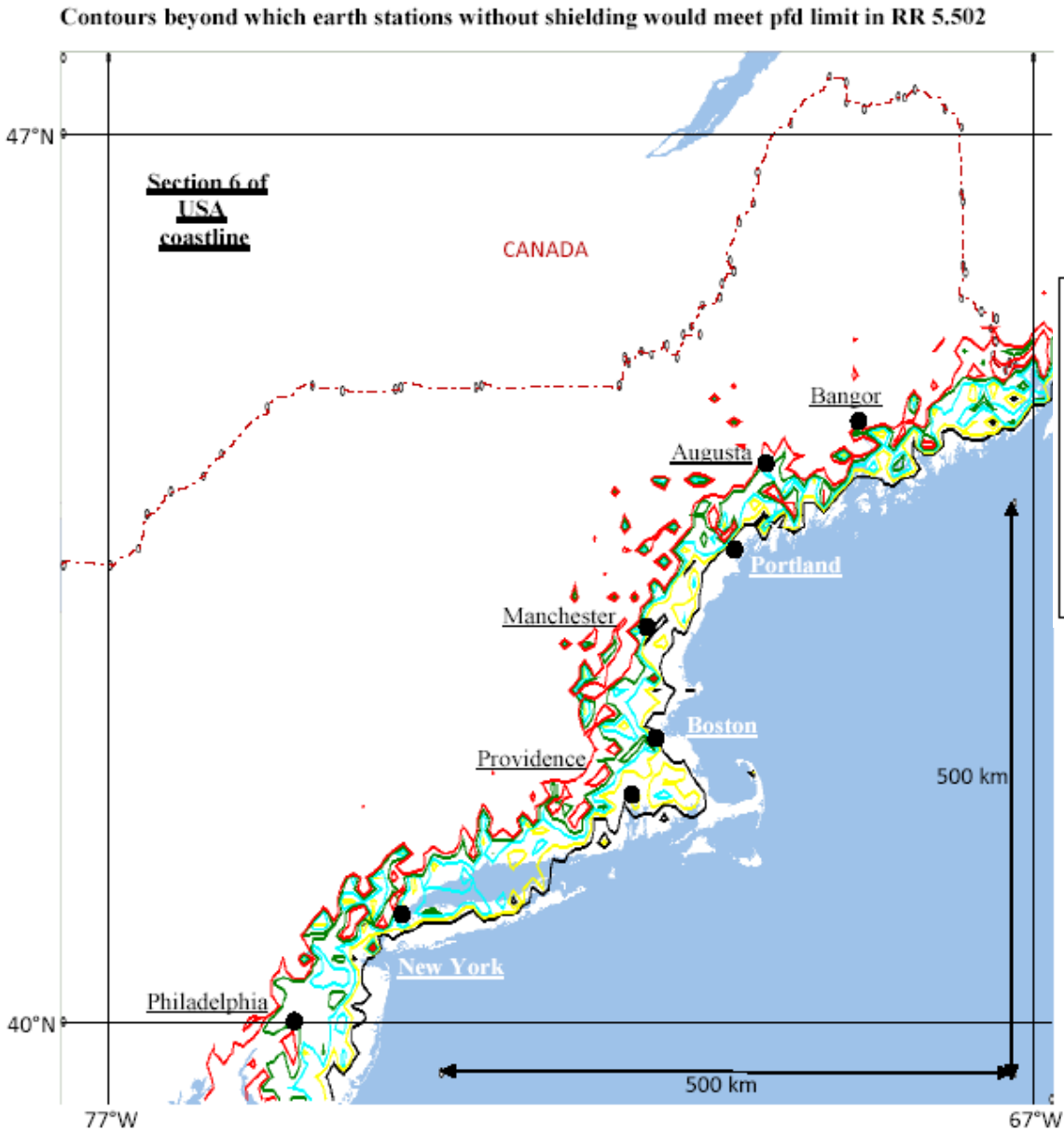

Ant. Dia. (m)	1.2-1.5	1.5-2.1	2.1-3.1	3.1-4.5
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2. The problem still exists

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- After the modification of the Petition a significant effort was exerted. Many meetings and phone calls were held with FCC officials. However, the frequencies in this band are also used by the NASA and the Department of Defense (DOD). Therefore, before the FCC can issue a Notice of Proposed Rule Making (NPRM), it must receive concurrence from NTIA.
- After a time it was learned that there was difficulty in obtaining NTIA agreement. Specifically, objections were made by DOD officials, and these objections were based on the need to protect the same type of radars on ships that were now being deployed at military installations on land at unknown places. Meetings were held with DOD officials, and the safeguards for protecting the radars were explained, and in addition it was pointed out that services of government agencies were being denied by not having this capability to determine whether FSS earth stations at a given location can transmit or not in the band 13.75-14.00 GHz without exceeding the pfd limit in RR No. 5.502.
- It is the view of the Petitioner and other US satellite organizations there is no logical basis for DoD objections given the methods available to protect its radars.
- On April 2010, a Report of all this process was provided to Mr. Ronald Reposi, Deputy Head of the Office of Engineering and Technology (OET), but up to now, there has been no response.

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